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ABSTRACT

A study investigated the interaction of cognitive, cultural, and linguistic factors in second-language concept formation in adults. Specifically, it examined how seven college students in a lower-division intensive Spanish class developed new gender concepts when learning a second language. Course instruction focused on concept construction at linguistic, cultural, and abstract levels. In recorded individual interviews with the instructor, the students performed two problem-solving tasks: (1) defining three nouns denoting specific gender cases for animates in Spanish; and (2) writing three complete sentences to accomplish a specific task in a restaurant. Immediately after completing each task, the students were asked to explain why a particular linguistic form they used in written work was correct or incorrect, focusing on gender markers. The text of one interview is presented here. Analysis of the interviews suggests that there is an interaction between cognitive, cultural, and linguistic factors affecting concept construction in second language learning situations, but also idiosyncratic, individual learning approaches and strategies and incorporate elements from the learner's own cultural history. Less advanced learners showed only implicit intralinguistic knowledge, with no understanding of the relationship between intralinguistic and extralinguistic-cultural knowledge. (MSE)

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Why is it "Una Persona" and not "Un Persona": Influence of Linguistic and Cultural Variables on Conceptual Learning in Second Language Situations

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Abstract

The objective of this study is to apply a multidimensional model representing the triple interaction of cognitive,.cultural, and linguistic factors to second-language concept formation processes in adults. The focus of this study is on using monolingual college students developing new gender concepts as "insightful co-researchers", whose verbal reports based on problem-solving tasks reflect the interaction of abstract conceptual categories, cultural symbolic meanings, and linguistic structures. An exploratory-interpretative data gathering approach was used for revealing underlying second-language cognitive processes reflecting how language and culture influenced thought. We integrate three previous models of knowledge forms (Byalistock, 1978), knowledge representation (Karmiloff-Smith, 1979, 1985, 1986), and language learning strategies (O'Malley et al., 1988) with our proposed model. We illustrate this literature integration with the results of a qualitative study that reveal a major thesis of unidimensional and multidimensional second-language concept formation processes in relation to linguistic and semantic levels of content knowledge domains.

Why is it "Una Persona" and not "Un Persona": Influence of Linguistic and Cultural Variables on Conceptual Learning in Second Language Situations

Interviewer (reading from student's paper): *El jóven es un persona que no tiene mucho años.* This is right. El jóven, Why did you pick *el* and not *la* ?

Student: Hm.....I was thinking of a young boy.

Interviewer: If you were thinking of a young girl, which article would you use?

Student: I would use *la jóven.*

Interviewer: *La jóven.* Okay. So, *jóven* would not change?

Student: Yes.

Interviewer: Okay. *El jóven es un persona.* (reading from student's paper) Why *un persona?*

Student: *Un persona* is masculine.

Interviewer: How come you have *un persona* ?

Student: Because you have *el jóven.*

Interviewer: Okay. *Un* reflects *el jóven.*

Student: Yes.

Interviewer: So, if I have *la jóven*, it would be, *La jóven es....*?

Student:, *Si*, es *una persona.*

Interviewer: Okay, so you are making the difference, right ? Feminine or masculine. (reading from student's paper) *El jóven es un persona que no tiene mucho años.* Why *mucho* and not *mucha* ?

Student: *Mucho, mucho* is like *el jóven, un persona, es masculino.*

Interviewer: Okay, *mucho* is reflecting *el jóven.*

Student: Ah..... *Si, o un persona.*

Interviewer: So, everything is reflecting ....

Student: Yes.

Interviewer: So, you have (reading from student's paper) *La jóven es una persona que no tiene.....*

Student: Hm..... *mu, mucha*.....No, I couldn't do that, because it would be *mucha años*...Ha,Ha,Ha (laughs).

Interviewer: So, are you kind of confused? If you put l*a jóven*. Just guessing, which one would you pick? If that would be *la jóven*.

Student: First, I think it should be *muchos*.

Interviewer: Aha, because *años* is plural?

Student: Yeah... and I don't think it would change. It would be *muchos años*.

Interviewer: Okay, so here there is a difference and they would be the same.

Student: Yes.

Interviewer: Actually, you are right, *el jóven y la jóven* can happen both.

The college student in the above excerpt is facing a problem solving task in which he must explain to his instructor/interviewer why he made certain linguistic choices as he wrote answers on an assignment for his first-year intensive Spanish course. In the study we report here, we were interested in exploring the application of a conceptual learning model to second language learning situations in adults. The objective of this study is to validate a multidimensional model that represents the triple interaction of cognitive, cultural, and linguistic factors in second language concept formation. We used an exploratory-interpretative data gathering approach to shed light on the relationship between language and thought, as it is our argument that second language learning situations are fruitful for highlighting the processes reflecting how thought is influenced by language and cultural factors. The focus of this study is on monolingual college students developing new gender concepts that are unique to the Spanish language and culture. These new gender concepts in Spanish reflect the interaction of linguistic structures, cultural or symbolic meanings, and abstract conceptual categories. In our model, the process of second language concept formation is influenced by the presence of both common and different first and second language structures, cultural symbolic meanings, and cognitive and metacognitive processes.

The student in the above excerpt is facing a common situation in that he must learn to be sensitive to a linguistic distinction that Spanish makes that is not relevant in his native

language. The task he faces requires the simultaneous consideration of intralinguistic and extralinguistic knowledge. For instance, when he must decide which article to use with the word *jóven* he must tap extralinguistic topic knowledge to decide if the feminine or masculine article is appropriate to capture his intended meaning or imagined referent. Then, when the interviewer asks him to justify his incorrect use of the masculine article with *persona*, he reveals that he is overextending a rule and applying it to a collective noun that is an exception to the rule. In fact, in Spanish, the application of gender to nouns and modifiers follows a complex set of rules and, for any one noun, different combinations of rules apply, reflecting linguistic, cultural, and cognitive dimensions. An English speaker learning Spanish must learn which rules apply in which context. The student in the early parts of the conversation represents a typical intermediate learner who shows overgeneralization of some rules and lack of knowledge of other rules and rule restrictions. At the same time, the student shows the creation of false hypotheses that consider only unidimensional and insufficient factors that do not include the multidimensional combinations of rules reflecting linguistic, cultural, and cognitive factors. When the interviewer pushes him to consider how he would use the gender appropriate adjective with the word *años*, he comes to the insight that he has overextended a rule and reaches a higher level of metacognitive awareness and self-evaluation. He laughs.

In previous work, we have argued that second language acquisition involves constructing conceptual and cultural knowledge representations as well as linguistic knowledge (Gonzalez, 1991, in press; Gonzalez & Schallert, 1993). Understanding how second language learners represent language-related concepts is a complex problem with important educational implications that has been the focus of much research and has yet to be solved. Past research studies (e.g., Bialystock, 1978; Karmiloff-Smith, 1979, 1985, 1986; O'Malley, Russo, Chamot, & Stewner-Manzanares, 1988) have only partially considered the interface of cognitive, cultural, and linguistic factors, which may explain contradictory results that have been reported. In addition, contradictory results may derive

from researchers using different levels of analysis, the process and product levels. Thus, an analysis centered on cognitive underlying processes may yield a different understanding of second language learning than an analysis focusing on the verbal products at a contrastive, error, or performance levels.

In addition, we propose that the study of second language learning at the cognitive processes level can be enlightened by the use of introspective report methods that focus on concept formation. We argue that the involvement of a learner as an "active knowing informant" is a key factor for discovering underlying cognitive processes in second language learning. We also argue that the presence of theoretical contrasts in the analysis of second language learning (i.e., process and product levels) is reflected in the difficulty of labeling, stating operational definitions, and measuring concept formation processes. To alleviate these difficulties, we make use of introspective report methods that provide access to a psychological dimension of metacognitive and metalinguistic processes, viewing the learner as an "insightful co-researcher." Moreover, we propose that the interface between cognition, culture, and language can be studied through problem-solving tasks that require the learner to articulate the underlying concept formation processes through verbal reports. Thus, we propose that through the use of verbal reports we can access the process of language-related concept construction reflecting how meaning is represented at the linguistic, symbolic, and abstract levels by the second language learner.

Finally, we anticipate that individual second language learners will show varying levels of sophistication in their cognitive and metacognitive processes, and linguistic, cultural, and conceptual knowledge depending upon the content domain they are learning. That is, the same learner can be at different points in his or her development depending on the specific linguistic, cultural, and conceptual characteristics of the content to be learned. Thus, we propose that there will be an interaction between the specific cultural and linguistic characteristics of the content to be learned and the specific language learning strategies and forms of knowledge of any particular learner.

In the following sections, we present an integration of three models that have been previously published, Byalistock's (1978) model of language learning processes and forms of knowledge, Karmiloff-Smith's (1979, 1985, 1986) model of knowledge representation, and O'Malley, Russo, Chamot, and Stewner-Manzanares's (1988) categorization of language learning strategies. We then discuss methodological problems that have plagued previous studies as a springboard to formulating specific design and methodological features for our own study, focusing on methodological dichotomies between introspective report methods and experimental or quantitative research methods, and between a product versus a process oriented research design. Next, we integrate this literature review on cognitive processes and methodological dichotomies with our proposed model of the cognitive, linguistic, and cultural factors influencing concept formation. Finally, we illustrate this integration with the results of an exploratory-interpretive study of college level students learning Spanish.

Models of Concept Construction and Strategy Use in Second Language Learning

The theoretical framework of our study is derived from three previously presented models developed by Bialystock (1978), Karmiloff-Smith (1979, 1985, 1986), and O' Malley et al.(1988). The integration of these three models is reflected in the content categories used for our data analysis, focusing on cognitive processes used for concept construction at three different levels: (a) forms of knowledge; (b) developmental phases; and (c) metacognitive, cognitive, and social-affective language learning strategies. This framework makes a distinction between first and second language knowledge, that is, intralinguistic knowledge; and extralinguistic knowledge, such as sociocultural knowledge. These two types of knowledge can be represented on a continuum of explicitness ranging from a vague, implicit, and insecure form to a clear, explicit, and secure form. Finally, in the framework, intralinguistic and extralinguistic knowledge merge in the semantic categories for gender encompassing general, regular, and regular cases.

Language Learning Processes and Forms of Knowledge

Bialystock (1978) presented a model of second language learning that was intended to account for discrepancies in individual achievement in different semantic domains. The model is explained in terms of learning processes and strategies that are organized in three levels: input, knowledge, and output. The knowledge level assumes that information about a language may be represented in three ways: explicit and implicit linguistic knowledge, and other knowledge. Other knowledge refers to all other information the learner brings to the language task explicitly or implicitly (e.g., knowledge of the native language or other languages, information about the culture associated with the target language, and knowledge of the world). Thus, having access to other knowledge is important because the meaning of linguistic knowledge is sometimes dependent upon particular cultural connotations. That is, whereas the use of the word in appropriate contexts is implicit, the specific cultural aspects of the meaning and its occasions for use may be articulated explicitly.

The difference between explicit and implicit linguistic knowledge refers to whether or not internal representations can be accessed by the language learner. Explicit linguistic knowledge contains all the conscious facts the learner has about the target language that can be expressed verbally. Implicit linguistic knowledge is the intuitive information upon which the language learner operates in order to produce responses at the comprehension or production levels in the target language. The content of explicit and implicit linguistic knowledge may include some grammar rules, vocabulary items, pronunciation rules, etc. Bialystock (1978) assigned three functions to the explicit linguistic knowledge source: (a) to act as a buffer for new information about language, some of which may, with continued use, become automatic and transferred to implicit linguistic knowledge; (b) to act as a store for information that is always represented explicitly; and (c) to act as an explicit articulatory system. By contrast, only one function is ascribed to the implicit linguistic knowledge

form: a working system containing all the information about the target language necessary for most spontaneous comprehension and production tasks.

Developmental Phases in Language Learning

Early conceptions of the nature of the cognitive processes involved in language learning often used dichotomies such as implicit and explicit, procedural and declarative, unconscious and conscious, representational and metarepresentational in explaining phenomena. Karmiloff-Smith (1979, 1985, 1986) argued that such conceptions were problematic because they did not capture the complex nature of the processes involved. She proposed a model for explaining representation of knowledge through language that focuses on developmental phases. Instead of using a dichotomy as other previously published models had, she proposed that knowledge was made up of modules each of which represented a domain. Domains consisted of knowledge represented in different codes, but instead of using categories of codes, Karmiloff-Smith proposed that the codes were on a continuum of accessibility with verbal and non-verbal representations at each end. Learners progress on this continuum from lower, non-verbal representations to higher, verbal representations. The possibility of representing knowledge through different continuous domains gives access to higher order concepts, to propositional thinking, logical reasoning, and metaknowledge. Thus, language, the most abstract representational system for cognition, makes possible higher forms of thinking such as metaknowledge.

Karmiloff-Smith (1986) presented a three-phase, multidimensional model for the explanation of the relations between implicit or unconscious and explicit or conscious metacognitive processes. These phases apply to specific domains rather than across domains, and are also loosely age-related. Thus, phases are recurrent cycles of processes that are repeated as the different aspects of the linguistic system develop. Language learning is not a simultaneous but a sequential process of rule learning that is influenced by recurrent transformations of knowledge in different domains. In the first phase, the stimulus is encoded linguistically, resulting in the formation of one-to-one mappings of

form and function without rules or access to consciousness. In the second phase, networks of semantic representations of linguistic structures in different contexts are explicitly defined. Robinett and Schachter (1983) presented different developmental errors of second language rule learning: overgeneralization, ignorance of rule restrictions, incomplete application of rules, and false concepts. The student in our introductory example shows all four of these developmental errors, and, in our view, this would place him at the second developmental phase. In the third phase, the learner is able to transform or re-represent non-verbal into verbal codes and to connect abstract codes with verbal metaknowledge that becomes explicitly linked via a common code. As a result, the learner has constructed a cognitive system that is very flexible, and that can be explicitly related and accessed through semantic networks.

Language Learning Strategies

O' Malley, et al. (1988) presented a classification system of three types of language learning strategies: metacognitive, cognitive, and social-affective (see the data analysis section in methods for the operational definitions). The first two were adapted from Brown and Palinscar (1982); and the third one was developed by O' Malley and colleagues. It is our argument that the use of language learning strategies proposed by O' Malley, et al. (1988) are related to the forms of knowledge suggested by Bialystock (1978), and to the developmental phases proposed by Karmiloff-Smith (1978, 1985, 1986). That is, the language learning strategies that individuals use will vary according to idiosyncratic preference and developmental level, and also according to the linguistic and cultural content being learned. In our framework, metacognitive strategies correspond to explicit knowledge and are the prime indicator that a learner has reached the third developmental phase because the learner is able to access consciously a verbal explanation for the production of linguistic structures. Some of the cognitive language learning strategies identified by O' Malley et al. (1988) correspond to an implicit form of knowledge where the learner uses automatic processes for producing or comprehending language. Other

cognitive language learning strategies correspond to explicit knowledge processes because the learner is able to access verbally the internal representational processes required (see the data analysis section in methods). Along with the cognitive strategies, social-affective language learning strategies are used by learners at all three developmental phases.

Methodological Problems

The exploratory-interpretative paradigm. The aim of the exploratory-interpretative paradigm applied to second language learning situations is to understand how learners reconstruct language processes, the view of self as a language learner, and of their extralinguistic knowledge. According to Grotjahn (1987), the researcher herself becomes a research instrument by virtue of her role as interpreter. Thus, in this research study, as much as possible, the researcher's interpretations and reconstructions of the learner's introspective reports, cognitions, and personal theories were restated to the learner for his or her agreement. That is, the researcher attempted to validate the communication procedure used because according to Grotjahn (1987) the validity of introspection as a data collection method is related to the researcher's conceptualization of language and theoretical model. As the objective of this study is to explain the influence of cognitive, cultural, and linguistic variables on concept formation in second language learning with the goal of developing a model and raise research questions, we adopted the exploratory-interpretative paradigm.

Performance techniques versus introspective report methods of data analysis. Historically, there has been a dichotomy in second language learning research methods between those that focus on product and those that focus on process in data analysis (i.e., quantitative and qualitative paradigms). Product-centered techniques, which, according to Færch and Kasper (1987), include contrastive, error, and performance analysis, all focus on observable language behaviors. One limitation of these techniques is that language utterances produced by two different language learners may look the same at the observable level. By contrast, qualitative, process-centered techniques offer the possibility of accessing different underlying representations at the metacognitive and metalinguistic

levels. When learners are asked to analyze their utterances at the introspective level, their participation as an "active knowing informant" may reveal the different strategies and cognitive processes they are using that cannot be observed at the performance, product level. That is, introspective report methods give access to psychological data, to metacognitive and metalinguistic processes. Thus, according to Grotjahn (1987), an "epistemological learner model" can contribute to a richer understanding of a phenomenon.

In addition to allowing access to the internal processes involved in language learning, asking learners to explain the what, how, and why of their language performance touches on a dichotomy, declarative versus procedural knowledge, that Færch and Kasper (1987) borrowed from cognitive psychology and used to explain language learning. These authors defined declarative knowledge as articulated and structured macroprocesses that can be brought to the learner's attention for explaining metalinguistic judgments. Procedural knowledge was defined as automatic cognitive and interactional microprocesses of which the language learner is not conscious. However, Færch and Kasper (1987) argued that procedural knowledge could be brought to consciousness by problem solving tasks that involve slow and controlled processing, causing a breakdown of automatic processing. For example, tasks that make the language learner face a problem in reception or production due to a lack of relevant declarative linguistic or other knowledge initiates the production of linguistic intuitions revealing new metalinguistic knowledge. Complementing Færch and Kasper's (1987) argument about gaining conscious access to procedural knowledge is our own observation that when second language learners are stimulated to think about linguistic problems as when the researcher probes their linguistic utterances, the learners may gain new insights or construct new knowledge through inferential reasoning.

Thus, it is our argument that problem solving tasks used with verbal reports can help the researcher to understand the relation between cognitive processes and strategies, forms of knowledge, and linguistic and cultural content represented. At the same time, the process of interviewing learners helps them access internal metacognitive and metalinguistic

processes that accelerate language learning, due to the presence of new conceptual connections and inferences made during the verbal report. Moreover, the reconstruction of language processes by the same learner allows the researcher to get at a deeper level of analysis, because it is the same learner who attempts to explain what metacognitive and cognitive processes are taking place when he or she produces observable verbal behaviors in the second language. Thus, the utterances produced in the second language by the learner acquire new "objective" meaning when they are explained by the same learner, because the researcher is not overimposing her own explanation of the utterances nor is she simply classifying the learner's utterances according to the type of linguistic errors made at the performance level.

Multidimensional Model Proposed: Triple Interaction of Cognitive, Linguistic, and Cultural Factors on Semantic Concept Formation

The use of verbal reports opens up the possibility of understanding the influence of cognitive processes and cultural symbolic meanings on concept construction in second language learning. In earlier work (Gonzalez, 1991, in press; Gonzalez & Schallert, 1993), we presented a model of the conceptual, cultural, and linguistic factors affecting concept formation. In this study we apply this same model of concept formation to the active construction of different forms of knowledge at different developmental phases; and the use of metacognitive, cognitive, and affective strategies by second language learners. We proposed that the learner develops cognitively through internalization, transformation, and concept re-representations in terms of cognitive, cultural, and linguistic factors. That is, the interface of linguistic structures, non-verbal concepts, and cultural concepts influences the formation of concepts at four levels: (1) conceptual knowledge about linguistic structures that can be expressed at both implicit and explicit levels, (2) knowledge of cultural conventions for using linguistic structures that is expressed as language proficiency at the pragmatic level, (3) knowledge of non-verbal sociocultural symbolic meanings that is expressed as cultural non-verbal concepts used at the pragmatic level, and

(4) the multidimensional interaction of language, cognition, and culture when constructing new concepts in a second language (see Figure 1).

Insert Figure 1 about here

The process of concept formation in first and second language can vary depending on the conceptual complexity and the symbolic sociocultural context in which linguistic structures are used. Whether a specific concept would be represented with a linguistic structure and marker and its corresponding symbolic meaning might depend on the cultural value that it has, and might reflect the historical-social development of the language. Languages differ in what aspects of meaning they represent directly in their linguistic structures, and this fact influences the formation of symbolic meanings and semantic categories. In our previous work and in the study we report here, we decided to focus on the linguistic feature of gender because Romance languages have many markers at the morphological and syntactic levels to represent gender where English has few or none. It is important to note that gender is just one example of many linguistic structures and markers that are different between Spanish and English.

Thus, native English speakers learning Spanish must experience two kinds of conceptual development: (a) for situations where gender is expressed similarly in both languages, they must assimilate the second language concepts into the first language concepts; (b) for those aspects of the second language that are unique and not represented in the first, they must construct a new, non-verbal representation that constitutes a new concept. Thus, we propose that learning a second language leads to the construction of new representations that are linguistically and culturally bound. Two basic language learning processes are proposed: (a) assimilation, when the abstract concepts and cultural and linguistic representations coincide in both the first and second language; and (b) accommodation, when the new abstract concepts with their correspondent cultural and

linguistic symbolic representations need to be constructed, as they are different between the first and the second language.

Gonzalez (1991, in press) conducted a study using this model of the influence of cognitive, cultural, and linguistic factors affecting concept and language development. As with the study reported here, the linguistic structure of gender was studied using problem solving tasks. Gonzalez (1991, in press) found that bilingual kindergarten and first grade Hispanic Spanish/English children represented concepts in two different systems. The first representational system was common to both languages, non-verbal, abstract, and universal. The second representational system was verbal or semantic, specific to the Spanish language for the verbal, gender-based cases, and thus culturally and linguistically bound. Thus, one universal and abstract representational system was constructed when non-verbal and verbal concepts coincided in both languages. In contrast, two culturally bound and semantic representational systems were constructed when non-verbal and verbal concepts were different across languages. In terms of the relationship between cognition and language, the abstract representational system was always at a higher developmental level than the semantic representational system. Thus, Gonzalez concluded that cognitive development precedes language development as a universal process of concept construction. In addition, there was also a difference in the conceptual developmental level attained in animate and inanimate content knowledge domains.

The study we report below reflects an attempt to integrate previous research findings, theoretical formulations, and methodological insights. Using an exploratory-interpretative data gathering approach, introspective verbal reports, and problem-solving tasks, we applied the model of second language to adults developing new gender concepts that are unique to the Spanish language and culture.

Method

Subjects

Seven students from a lower division intensive Spanish class at a large, state-supported university in the Southwest volunteered to participate in the study. The first author was the instructor for the class and also acted as the interviewer. Personal background data were collected at the beginning of the semester by giving students open-ended questions regarding their major, rank, age, second or foreign language background, and personal objective for studying Spanish as a second language. All the five female students were from an Anglo ethnic background, one male student was from a Hispanic background, and one male student was from an African-American background. All students were English native speakers in the process of learning Spanish as a second language, and the majority of the students had some background in learning a second language. All students were between the ages of 19 and 21. Five students were Freshmen and two students were Juniors. None of the students were Spanish majors. When asked about their expectations for the Spanish class at the beginning of the semester, students reported that they expected to acquire "a strong knowledge of the language and the culture."

Given that this study focuses on in-depth analysis of individual cases, we consider important to include additional relevant characteristics of the subjects. Names have been changed in order to protect the identities of the subjects.

• Karen was a 19 year-old Freshman majoring in Psychology. She had studied French for four and a half years in high school, and had recently spent two months in rural Ecuador. Karen had received two years of Spanish tutoring prior to her trip to Ecuador. Her motivation to study Spanish was related to her goal of returning to a small village in Ecuador again.

• Jessica was a 19 year-old Junior student with a major in Journalism. She had taken some French as well as some high school level Spanish. Both of her parents spoke some Spanish. When asked about her motivation for learning Spanish, Jessica reported

that she would like to communicate with native speakers and the Spanish speaking population in her area.

• Helen was a 18 year-old Freshman, who was majoring in Communications. She had had two years of high school Spanish, and had traveled extensively in Mexico. She reported that learning Spanish would better serve her travel needs.

• Heather was a 21 year-old Junior student majoring in Psychology. She had had two years of high school Spanish and anticipated traveling in Spanish-speaking countries in the near future.

• Lynn was an 18 year-old Freshman, whose major was bilingual education. She had taken high school Spanish for two years, and considered learning how to speak Spanish a mandatory skill in bilingual education.

• Robert was a 19-year-old Freshman student, who had not chosen his major yet. He had had two years of Spanish in high school, and had maternal grandparents who spoke to him only in Spanish when he was a child. Due to Robert's background in the Spanish language, his comprehension level of the Spanish language was higher than his production level, and his pronunciation was good. In addition, he was intrinsically motivated to learn Spanish because he had a positive attitude toward the Hispanic culture and the Spanish language.

• Michael was an 18 year-old Freshman from an African-American background, majoring in Computer Science. Michael had not taken any Spanish classes in high school, neither had he been exposed informally to Spanish before. Thus, he was the only student with no prior background in the Spanish language. At the beginning of the semester Michael reported that he expected to speak Spanish fluently and to understand native speakers. He was under the impression that learning Spanish would be easy for him.

Instructional Method

The instructional method used to teach Spanish to this class was focused on concept construction at the linguistic, cultural, and abstract levels. This conceptual approach

developed by Gonzalez offered the learners the possibility to discover and understand the underlying symbolic sociocultural meanings and different conceptual classifications of the world given by different linguistic structures in the second language. Learners were stimulated to discover the underlying cultural meanings and conceptual classifications when learning new linguistic structures. The instructor acted as a facilitator for modeling how to think with the Spanish language in order to discover the culturally bound semantic categories. It is important to note that the instructor is a native speaker of the Spanish language, who is also bilingual (Spanish/English) and bicultural. Students were presented with linguistic cases and were stimulated to discover the underlying linguistic and semantic rules. For instance, in the case of gender, the linguistic rule is related to cultural and abstract classifications that call for using extralinguistic knowledge of natural gender (i.e., physical) for animates and non-natural gender (i.e., sociocultural linguistic conventions) for inanimates. Thus, this conceptual approach was meant to stimulate the learner to understand that the general linguistic rule for assigning gender to nouns (i.e., nouns ending in "o" are masculine and nouns ending in "a" are feminine) is connected with cultural extralinguistic knowledge (i.e., symbolic connotative meanings of nouns) and abstract classifications in the Spanish language (i.e., animates can have two genders due to the presence of a natural origin gender, and inanimates can only have one gender that is given by a linguistic convention) that are semantic in nature (i.e., meanings of words are culturally and linguistically bound).

According to Collins and Stevens (1982), good teachers have three major hierarchical goals (a) to teach students the facts and concepts of a domain of knowledge, (b) to teach students a particular rule or theory underlying a domain of facts and concepts, and (c) to teach students how to derive a new theory for a domain of knowledge. The conceptual approach has as a goal to stimulate students to understand that for the content knowledge domain of second language learning only a theory considering multiple factors stemming from the linguistic, cultural, and cognitive dimensions will be successful for

constructing new concepts. Thus, according to Collins and Stevens's theory, a second higher goal is pursued in the conceptual approach used in this study for second language learning with three subgoals: (a) for the student to analyze different cases in order to derive the rule or theory that the teacher has in mind, (b)to stimulate the student to confront incorrect learning hypotheses through eliciting and "debugging" incorrect rules or theories, and (c) to teach students how to make novel predictions based on the rule or theory. In the verbal reports used in this study, the interviewer has a double role of an instructor and a researcher, who has as a goal to stimulate students to form second language concepts at higher levels. In order to achieve this goal, the interviewer uses probing strategies that lead students to make new inferences and to interrelate multidimensional factors stemming from the linguistic, cultural, and cognitive domains.

Furthermore, according to Collins and Stevens (1982), good teachers use a number of entrapment strategies to make students reveal their misconceptions about a knowledge domain. They stated, "Some of these misconceptions exist prior to the teacher's inquiry, but some are in fact created by the inquiry" (Collins & Stevens, 1982, p.81). In fact, we have proposed in this study that the methodology that we use, introspective verbal reports, can act as a data collection instrument as well as a technique for stimulating students to construct second language concepts at a higher level. The interviewer probes students' ideas by offering counterexamples when misconceptions and insufficient factors are taken into consideration, or false hypotheses are made for solving the language problems presented. Collins and Stevens (1982) referred to these cases of probing as teaching strategies used when students propose a rule or make a prediction based on one or more factors that are insufficient. This case of using counterexamples for insufficient factors happens also in second language learning situations when students only consider isolated unidimensional factors, and as a result construct misconceptions or false hypotheses. Second language problems can only be solved when students, with the scaffolding help of the interviewer, can make inferences and relations between intralinguistic and

extralinguistic knowledge resulting in a multidimensional interaction of factors stemming from the linguistic, cultural, and cognitive domains. The use of counterexamples for insufficient factors and the scaffolding role of the interviewer when probing the student is illustrated in the excerpt included at the beginning of this paper, and also in the continuation of this excerpt included as a case study below.

Tasks

For the data analyzed and reported here, two problem-solving tasks were designed for conducting verbal reports in order to access metacognitive, cognitive, and affective language learning processes. The first task consisted of defining three nouns denoting specific linguistic gender cases for animates in Spanish. Subjects were required to produce the appropriate article for the noun, and to use categories and descriptions to fill in the complement part of the definition. The first and second nouns corresponded to neutral gender cases in which the article defines if the animate referent is feminine or masculine (e.g., *el/la jóven, el/la cliente*). The third noun corresponded to a collective noun for animates that is a special case (i. e., generally nouns ending in "e" tend to be masculine, but *gente* is linguistically feminine -*la gente*), and moreover is counter to a general, related linguistic rule stating that masculine prevails over feminine gender (i.e., *gente* is linguistically feminine and encompasses both physical genders). Students were asked to write at least 5 words per definition, and to define the word so that their classmates could guess the word being defined.

The second task involved providing the students with a real-life context for communicating functionally with the Spanish language. The following directions were given: "You are at a Mexican restaurant and you are very hungry. You would like to accomplish three actions: (a) call the attention of the waitress; (b) order 7 items: tortillas, chicken, rice, tomatoes, flan, and apple pie; and (c) ask for the bill" Subjects were asked to write three complete sentences, one for each action, with at least 5 words per sentence. Students were also told to concentrate only on what they would say in order to accomplish

the three actions, and not to write a dialogue between themselves and the waitress. That is, they were to play the role of the client only. Both tasks were familiar to the students as they had often engaged in similar assignments as part of regular class activity.

Students were interviewed individually in the instructor's office. As they arrived, they were given the two tasks written on paper and received instructions in English. Students were reminded to supply the correct gender form in their written answers. Immediately after they had completed both tasks, the students were asked to explain why a particular linguistic form they had supplied in their written work was correct or incorrect. The focus of the questions was on gender markers. Verbal reports were audio recorded for subsequent analysis.

The questions used in the verbal reports included general open-ended questions common to all subjects, and also some specific questions used to follow the train of thought of the subject. The researcher always used a general question referring to the underlying reason that the subject had for producing a specific linguistic structure of interest for the study. For example: Why did you use _____ (specific linguistic structure)? The researcher would repeat the question or clarify the answers given by the subject. Restating the subjects' answers was considered important so that correct interpretation and categorization of the subjects' reports could be accomplished during data analysis. It was also considered important to probe subjects by asking them if a change in the linguistic gender of the noun could be made. Probing stimulated some subjects to state new insights, suggesting that they had constructed new knowledge during the interview. The conversation was closely controlled by the focus of our research (i.e., gender assignment for nouns and strategies used for constructing extralinguistic and intralinguistic knowledge forms and their interactions). However, students were always given the freedom to bring up topics naturally and to follow their own ideas during their verbal reports. Structure to the responses was provided later by the researchers through content analysis. Thus, the focus of the questions asked by the researcher was on the reason why a particular linguistic

structure had been produced by learners, and on the learners' level of understanding of linguistic structures in relation to underlying cultural symbolic meanings and abstract knowledge categories.

Data Analysis

Three factors influencing concept formation in second language learning situations were taken into consideration in this study: intralinguistic, extralinguistic-cultural, and cognitive. Intralinguistic factors include the linguistic function that categorizes the student's response at the morphological syntactic level in reference to gender. Extralinguistic-cultural factors include two subcategories of variables: (a) by origin, encompassing natural physical gender, that includes animates (i.e., animals and people); and non-natural gender, that includes inanimates (i.e., objects and abstract concepts); and (b) by language, encompassing sociocultural symbolic meanings at the connotative level; and linguistic structures and markers at the denotative level (both levels can include cases that are common to Spanish and English, or unique to Spanish). Intralinguistic and extralinguistic-cultural factors merge in semantic categories for gender including general rules, regular and irregular cases (see Table 1).

Place Table 1 about here

Cognitive factors encompass forms of knowledge, developmental phases, and language learning strategies. Bialystock's model (1978) was used for adapting five nominal categories of forms of knowledge: (1) extralinguistic general knowledge, explicit justifications by reference to general knowledge outside the linguistic task (i.e., real-world, sociocultural, and pragmatic knowledge); (2) extralinguistic topic knowledge, explicit justifications by reference to specific object knowledge outside the linguistic task; (3) explicit relation between extralinguistic general or topic knowledge and intralinguistic knowledge at the system (linguistic categories) or marker (specific linguistic cases) levels, justification by reference to the relationship between knowledge outside the linguistic task

and linguistic knowledge; (4) explicit intralinguistic knowledge at the system or marker levels, justification of responses by making explicit reference to linguistic categories or specific cases; and (5) implicit intralinguistic knowledge at the system or marker levels, correct responses involving linguistic structures or cases with no further explanation. These five categories adapted from Bialystock's model (1978) were combined with Karmiloff-Smith's model (1979) referring to three developmental phases (see Table 1). We consider that the first three forms of knowledge indicated that the learner was at the third developmental phase. Especially the third form of knowledge indicating a relation between extralinguistic and intralinguistic knowledge was considered to reveal the construction of new conceptual relations or insights by the language learner (e.g., a metacognitive strategy of inferencing). The fourth form of knowledge was considered to indicate that the learner was at the second developmental phase as she could access consciously linguistic knowledge of rules and specific cases; however, no relationship was made with extralinguistic knowledge. The fifth form of knowledge was considered to indicate that the learner was at the first developmental level, as she could not access verbally the underlying strategies and forms of knowledge used for learning linguistic structures or markers (see Table 1).

Second language learning strategies were adapted from the categorization made by O'Malley et al. (1988) that differentiates between metacognitive, cognitive, and social-affective strategies. Nine metacognitive strategies were differentiated by O'Malley et al., including (1) advance organizers, making a general but comprehensive preview of the concept or principle in an anticipated learning activity; (2) directed attention, deciding in advance to attend in general to a learning task; (3) selective attention, deciding in advance to attend to specific details of a learning task; (4) self-management, understanding the conditions that help one learn and arranging for the presence of those conditions; (5) functional planning, planning for and rehearsing linguistic components necessary to carry out an upcoming language task; (6) delayed production, consciously deciding to postpone

speaking to learn initially through listening comprehension; (7) self-evaluation, checking the outcomes of one's own language learning against an internal measure of completeness and accuracy; (8) monitoring, bringing explicit knowledge of word meanings and structures to a language task for examining or correcting the response; and (9) inferencing, generating an explicit linguistic hypothesis about a previously unknown linguistic structure.

Fourteen cognitive strategies were differentiated by O'Malley et al., including (1) repetition, initiating a language model, including overt practice and silent rehearsal; (2) directed physical response, relating new information to physical actions used as directives; (3) imagery, relating new information to visual concepts in memory via familiar and easily retrievable visualizations; (4) auditory representation, retaining the sound of a linguistic sequence; (5) key word, remembering a new word by linking it with a familiar linguistic sequence, image, or concept; (6) resourcing, expanding a definition of a word or concept through the use of the target language reference materials; (7) translation, using the first language as a basis for understanding and/or producing the target language; (8) grouping, reclassifying and labeling the new linguistic material based on common attributes; (9) note taking, writing down the main ideas, outlining, or summarizing target language materials in a written or oral form; (10) deduction, consciously applying rules to produce or understand the second language; (11) recombination, constructing a meaningful language sequence by combining known elements in a new way; (12) contextualization, placing a word or phrase in a meaningful language sequence; (13) elaboration, relating new information to other concepts in memory, and (14) transfer, using previously acquired linguistic and/or conceptual knowledge to facilitate a language learning task.

In addition, four second language learning cognitive strategies proposed by Robinett and Schachter (1983) were used for data analysis: (1) overgeneralization, creating a deviant structure on the basis of experience with other linguistic structures in the target language in order to avoid redundancy; (2) ignorance of rule restrictions, failing to observe the restrictions of existing linguistic structures when applying them to new contexts; (3)

incomplete application of rules, lacking accurate and complete knowledge of linguistic rules; and (4) false concepts hypothesized, making developmental errors resulting from faulty comprehension, distinctions, or contrasts in the target language. These four second language learning cognitive strategies were considered to be characteristic of a learner at the second developmental phase, who could only show explicit forms of knowledge.

According to O'Malley et al., social-affective strategies include four categories (1) cooperation, working with peers to obtain feedback, pool information, or model a language activity; (2) question for clarification, asking an instructor or other native speaker for repetition, paraphrasing, explanation, and/or examples; (3) formal practice, attempting to increase exposure to the target language, or asking for information about the rules of the linguistic structures and markers to represent meaning; and (4) functional practice, using the target language in communicative situations.

We consider that all nine metacognitive strategies correspond to explicit forms of knowledge, the first five cognitive strategies correspond to implicit knowledge levels, and that the following nine cognitive strategies correspond to explicit levels of knowledge. In addition, we consider that the four social-affective strategies correspond to explicit forms of knowledge. That is, we have attempted to integrate the categorization of language learning strategies adapted by O'Malley and colleagues with Bialystock's implicit and explicit levels of knowledge, which in turn were integrated also with Karmiloff-Smith's developmental levels. In sum, we propose that three factors, intralinguistic, extralinguistic-cultural, and cognitive merge in the semantic function of language, represented in this study by the semantic categories for gender (see Figure 1, Table 1, and Appendix A). Thus, these semantic categories created by Gonzalez for this study reflect the multidimensional interrelationship between cognition, culture, and language for the construction of second language concepts. Thus, theory triangulation was used as we tried to interpret a single set of data from different integrated theoretical perspectives (i.e., Bialystock, 1978; Karmiloff-Smith, 1979; O'Malley et al. , 1988) associated with specific variables of interest and

theoretical and applied objectives in this study. Data analysis was carried out by means of interpretative procedures (i.e., qualitative content analysis of nominal categories) in order to find associations or patterns among variables which were revealed in subjects' productions. We "let the data speak to us", as hypotheses were not stated a priori; just expected outcomes were pointed out in relation to some theoretical perspectives. Thus, a qualitative data analysis approach was taken in this study, in which theory was tested with heuristic and applied implications.

Two levels of analysis were differentiated in this study, utterance and cluster levels. The utterance level was considered a single idea conveyed by the subject. Each utterance was coded independently in relation to cognitive variables (i.e., forms of knowledge, developmental phases, and language learning strategies). Utterances referring to the same word being discussed throughout the verbal reports were considered a second level of analysis that we called cluster. Each cluster was categorized independently in relation to gender cases that included linguistic and semantic functions. Following the evolution of the discussion of the same cluster by the subject was considered particularly important as new levels of understanding of the same cluster emerged throughout the verbal report. Thus, the cluster as a unit of analysis can provide evidence for the argument that verbal reports are not only data collection tools, but also an instructional method for developing new conceptual knowledge at higher developmental levels. We consider that these two levels of data analysis can reveal some common or different patterns in the specific forms of knowledge, developmental phases, and language learning strategies that may be related to the interaction of intralinguistic, extralinguistic-cultural, and cognitive variables. Thus, these two data analysis levels were anticipated as a potential source of discovering patterns of the influence of linguistic and cultural factors on the process of second language concept formation. We derived this system of data analysis from the actual context of data, having an open-minded attitude, and letting "data speak to us" in order to develop a structure for data analysis based on nominal categories derived from the same data bank.

Two judges (the third and fourth authors) categorized independently each subject across all nominal categories. One judge concentrated more on the intralinguistic and extralinguistic-cultural variables (i.e., semantic categories for gender) and checked on the categorization of cognitive variables (i.e., forms of knowledge, developmental phases, and language learning strategies) made primarily by the second judge. The second judge focused more her attention on the categorization of cognitive variables, and also checked on the categorization of intralinguistic and extralinguistic-cultural variables predominantly made by the first judge. Judges were trained by the first author during a six week period in order to gain familiarity with the theoretical framework underlying the nominal categories, and also for achieving a high reliability coefficient between judges. Before data analysis was conducted a high reliability across judges (r = .81) was established, assuring that the operationalization and understanding of the nominal categories was consistent and clear between judges. Any disagreement obtained during the process of training for coding data was discussed among the first author of the paper and the two judges. When the final data analysis was done, the few disagreements arising were also discussed among the two judges, in order to achieve a common categorization.

Results and Discussion

Data are reported and interpreted, using a two level data analysis adapted for this study, the utterance and cluster levels. In addition, with the purpose of integrating the summary of this data report, data interpretation will follow the three types of focus suggested by Bogdan and Biklen (1982): (a) thesis or propositions related to the integration of literature and the model proposed in this paper, (b) themes that encompass theoretical formulations emerging from data analysis in the form of patterns or abstract conceptual categories, and (c) topics that include descriptions of specific findings. We include a selected case study and quotes for illustrating data interpretation and integration.

Case study. With the purpose of illustrating the procedure that we follow for getting from the data analysis to the results and conclusions, we expand the excerpt of the student

used as an example at the beginning of this paper. Robert exemplifies a good language learner who is at the second developmental phase, as he is trying to understand explicitly his already acquired implicit linguistic knowledge. Both language problem solving tasks are included, as the first definition task focuses on animate object referents, and the second role-playing task includes primarily cases of inanimate object referents. The excerpt included below is divided into the two levels of data analysis used in this study, utterance and cluster levels. In addition, we include in the analysis of this excerpt semantic categories for gender, reflecting the interrelation of intralinguistic and extralinguistic-cultural factors (see Table 1); and the coding system reflecting cognitive factors (i.e., forms of knowledge, developmental phases, and language learning strategies. The interpretation and connection with the multidimensional model proposed in this study is also included in the emerging thesis, topics, and themes section.

Definition task.

• Cluster 1: *Tienda*.. Semantic categories. Intralinguistic factors, by linguistic function -noun; by semantic function -general rule. Extralinguistic-cultural factors, by language -linguistic structures and markers at the denotative level that are unique to the Spanish language; and by origin -non-natural origin gender for inanimates.

Interviewer: you pick *la tienda*....Why *la* and not *el*?
(The interviewer was trying to stimulate the student to explicitly refer to the general rule for assigning linguistic gender to nouns, see Appendix A).

Utterance 1: Student: Because *tienda* is feminine.

Interviewer: Okay. How do you know?

Utterance 2: Student: Oh.....because of the "a" *en tienda*, just that. (Form of knowledge: Explicit intralinguistic knowledge -Markers. Second developmental phase. Cognitive strategy: Deduction as Robert is applying the linguistic rule to a specific case).

• Cluster 2: *Persona*.. Semantic categories. Intralinguistic factors, by linguistic function -noun; by semantic function, regular cases. Extralinguistic-cultural factors, by language -sociocultural symbolic meanings at the connotative level that are unique to the Spanish language, and -linguistic structures and markers at the denotative level that are unique to the Spanish language; and by origin -natural physical gender for animates.

Interviewer: So, How come, what happens in *persona*. This is an "a". You know, *persona*.

Utterance 3: Student: *Persona*, I thought it would just stay. You know like.....I'm trying to think of an example of an ending "a", like *la tortilla*. (Form of knowledge:

Explicit intralinguistic knowledge -System, because Robert is pointing out to a category of words that correspond to the general rule for inanimate objects. Second developmental phase. Cognitive strategy: Deduction as Robert is trying to illustrate the general rule through an example, *tortilla* in which only one linguistic gender for the suffix can be applied. However, the example was not completely appropriate for explaining the case of *persona*, because in *tortilla* the article always is feminine and can never be changed as there is no natural physical gender in the referent. Instead, for the word *persona*, even though there is a natural physical gender, only one conventional linguistic gender applies. Robert's hypothesis was that for the noun *persona*, the "a" ending will always stay, and that the article will indicate if the linguistic gender was feminine or masculine).

Interviewer: Okay. So, that would be kind of an exception that , *tortilla* would be another example, is that an exception?

Utterance 4: Student: Yes.

Interviewer: Well, actually this is *una persona*, in both cases. Does it make sense to you? Why? (The interviewer was pointing out the correct linguistic gender as a counterexample in order to ask Robert for an explanation).

Utterance 5: Student: Because ...*una persona* is always feminine, so *una persona* does not match. So, it would be *una* for feminine or masculine. (Form of knowledge: Explicit relation between intralinguistic marker and extralinguistic topic knowledge -Markers, because Robert stated that the article and the suffix "a" of *persona* do not have to match in gender with the actual feminine or masculine gender of the referent. Third developmental phase. Metacognitive strategy: Inference, as Robert is realizing at this point that the general rule does not apply for this specific case). Robert has progressed from using cognitive to metacognitive strategies with the help of the scaffolding role of the interviewer. The interview process has stimulated Robert to think at higher levels, leading him to an insightful conclusion made through inferential reasoning.

• Cluster 3: *Cliente*. Semantic categories. Intralinguistic factors, by linguistic function -noun; by semantic function -regular cases. Extralinguistic-cultural factors, by language -sociocultural symbolic meanings at the connotative level that are unique to the Spanish language, and linguistic structures and markers at the denotative level that are unique to the Spanish language; and by origin -natural physical gender for animates.

Interviewer: *Muy bíen. El cliente.* Why did you pick *el* and not *la?*

Utterance 6: Student: Because I thought it was masculine, Ha, Ha, Ha (laughs). (Form of knowledge: Extralinguistic topic knowledge. Third developmental phase. Cognitive strategy: Imagery, as Robert is laughing now because he realizes that there was not any linguistic hint in the directions given for the task indicating that the marker should be masculine).

Interviewer: So, you are actually thinking of a man. A man as a customer?

Utterance 12: Student: Yes.

Interviewer: Okay, how about if I have a woman, who is a customer?

Utterance 13: Student: It would be the same, *la cliente*. (Form of knowledge: Implicit intralinguistic knowledge -Markers, because Robert is just pointing out what would be the linguistic form for this specific case, without referring to any linguistic rule or further

explanation. First developmental phase. Cognitive strategy: Deduction, as Robert is correctly applying the linguistic rules for regular cases).

• Cluster 4: *Algo*. Semantic categories. Intralinguistic factors: by linguistic function -pronoun; by semantic function -regular cases. Extralinguistic-cultural factors: by language -linguistic structures and markers at the denotative level that are unique to the Spanish language, and by origin -non-natural origin gender for inanimates.

Interviewer: Okay. *Alguien que compra algo.* (reading from students' paper). Okay. Why you have here *algo* and not *alga?*

Utterance 14: Student: Because it is not used in *alga* form. It is always *algo*, something. (Form of knowledge: Explicit intralinguistic knowledge -Markers, because Robert is referring to a specific pronoun explaining the reason why you cannot change the linguistic gender. Second developmental phase. Cognitive strategy: Translation, as it also happens in English "something" is a neutral pronoun that does not refer to an object that has a specific linguistic gender).

Interviewer: Okay. If you buy, for example *la gasolina. Algo* would apply to *la gasolina?*

Utterance 15: Student: *Si.*

Interviewer: Okay, so it doesn't matter if this is feminine?

Utterance 16: Student: No, it doesn't matter.

• Cluster 5: *Gente*. Semantic categories. Intralinguistic factors, by linguistic function -noun; by semantic function -regular cases. Extralinguistic-cultural factors, by language -sociocultural symbolic meanings at the connotative level that are unique to the Spanish language, and linguistic structures and markers at the denotative level that are unique to the Spanish language; and by origin -natural physical gender for animates.

Interviewer: Okay, *gente*. How did you know *gente* is masculine? (*gente* is actually feminine, an irregular case).

Utterance 17: Student: Well, because of the majority of the people, even if there was only one man, in a group of women; it wouldn't matter, it will be always masculine. And, if there is only a big group of just women, then it would be *la*. (Form of knowledge: Explicit intralinguistic knowledge -System, because Robert is pointing out a regular case that applies to a category of objects. Second developmental phase. Cognitive strategy: Overgeneralization and ignorance of rule restrictions, as Robert does not know that *gente* is an irregular case, and thus an exception for the regular case that he is pointing out).

Interviewer: Okay, if you have only feminine you would make that difference.

Utterance 18: Student: Yes.

Interviewer: *la*, right?

Utterance 19: Student: Yes.

Interviewer: And if you have a bunch of people of both genders.... it would be.....

Utterance 21: Student: Masculine.

• Cluster 6: *Hermanos, tías,* and *abuelos.* Semantic categories. Intralinguistic factors, by linguistic function -noun; by semantic function -general rule. Extralinguistic-cultural factors, by language -sociocultural symbolic meanings at the connotative level that are unique to the Spanish language, and -linguistic structures and markers at the denotative level that are common to Spanish and English; and by origin -natural physical gender for animates.

Interviewer: In general....Okay. *De la familia.* (reading from student's paper). You told me the ending "a".. *Son personas que no tienen hermanos, tíos, abuelos, primos.* (reading from student's paper). *Muy bíen.* Why are you picking here everything in the masculine?

Utterance 23: Student: *No, tías.*

Interviewer: Is this *tías?* Okay.....so, Why *hermanos* is masculine and *tías* is feminine?

Utterance 24: Student: I just..... I wanted to include *hermanos y hermanas, tías,* I just pick them .... I guess. (Form of knowledge: Implicit intralinguistic knowledge -Markers, as Robert cannot explain the reason why he decided to use different linguistic genders. First developmental level. Cognitive strategy: Imagery, Robert just imagined and pointed out a specific gender).

Interviewer: Okay, so both can happen.

Utterance 25: Student: For *abuelos,* I just, I used it for using, for talking about both, but *el masculino* changed everything to *abuelos.* (Form of knowledge: Explicit relation between extralinguistic topic knowledge and intralinguistic marker knowledge, as Robert could explain the specific regular case that made him use the linguistic masculine gender for referring to the physical gender of the animate objects that he had in mind. Third developmental phase. Metacognitive strategy: Inferencing).

• Cluster 7: *Primos.* Semantic categories. Intralinguistic factors, by linguistic function -noun; by semantic function -general rule. Extralinguistic-cultural factors, by language -sociocultural symbolic meanings at the connotative level that are unique to the Spanish language, and linguistic structures and markers at the denotative level that are unique to the Spanish language; and by origin -natural physical gender for animates.

Interviewer: How about *primos?*

Utterance 26: Student: You can have a lot of cousins, and some females and some males. (Form of knowledge: Extralinguistic topic knowledge, as Robert is pointing out to that the specific animate object referents have natural physical gender. Third developmental phase. Metacognitive strategy: Inferencing, as Robert could understand that the linguistic gender was reflecting the physical natural gender of the animate referents).

• Coming back to cluster 5: *Gente.*

Interviewer: Okay, Everything is correct except this. You see....the only case is *la gente.* Does it make sense to you? (The interviewer wanted to provide the correct linguistic gender in order to probe Robert's comprehension of this irregular case).

Utterance 27: Student: Hmm....Yes.

Interviewer: Why?

Utterance 28: Student: I wasn't sure,..... I guess I wasn't sure like in *la gente*, this is just a part of *personas* and it relates to people.... but it is just used in the *la* form. (Form of knowledge: Explicit relation between extralinguistic general knowledge and intralinguistic marker knowledge. Because Robert is able to relate his previous understanding that *gente* refers to both feminine and masculine animate referents, with his realization that the category people -*personas*- could refer to animate referents of both physical genders. Third developmental phase. Metacognitive strategy: Inferencing and monitoring, as Robert could realize at this point of the interview that there was a connection between *gente* and *personas*, as both had the same animate referent -the category people in English). At this point of the interview, Robert is having a major insight, bringing his higher level of understanding achieved earlier in the interview to shed light on getting at a higher form of knowledge, developmental phase, and learning strategy.

Interviewer: Okay. Even if you have *la gente*, do you think that refers to men also?

Utterance 29: Student: Well.....I was trying to think if I rather use it in the general form, and I know I used the *la* before, but I just used *el* anyway, but I wasn't sure. (Form of knowledge: Explicit intralinguistic knowledge -System, as Robert is pointing out to the existence of a general rule and of a specific regular case; however, he is confused as which one would apply in this case. Second developmental level. Metacognitive strategy: Self-evaluation. Cognitive strategy: Overgeneralization and ignorance of rule restrictions, as Robert knows the existence of a general rule and of a regular case, but he cannot realize that *gente* is an exception).

Interviewer: So, you were actually trying to tap both, masculine and feminine?

Utterance 30: Student: Yes.

Interviewer: But, was there any hint in the *gente* form that tells you that *gente* may be masculine?

Utterance 31: Student: Yes, just ending in "e", like that, or "a" or any other..."*ción*", or anything like that, it is obvious that it is the *la* form. It makes it clear that it is wrong masculine, just because of the way it looks. (Form of knowledge: Explicit intralinguistic knowledge -System, because Robert is relating the general rule to regular cases in which a specific linguistic gender is indicated by the suffix. Second developmental phase. Cognitive strategy: Deduction, as Robert is applying linguistic rules)

Interviewer: Okay, but when you say the way it looks, what specifically are you talking about?

Utterance 32: Student: Ah.....the ending "a" is feminine, but if it looks like "o" or "e" is masculine. (Form of knowledge: Explicit intralinguistic knowledge of the target language -Markers, as Robert is pointing out specifically the ending as relevant to deciding what linguistic gender to apply. Second developmental phase. Cognitive strategy: Deduction).

Interviewer: "o" or "e". So, this is ending in "e", How come this is feminine?

Utterance 33: Student: This is just an exception. (Form of knowledge: Explicit intralinguistic knowledge. Second developmental phase. Metacognitive strategy: inferencing, as Robert is arriving at the conclusion that *gente* is an exception based on the scaffolding help of the interviewer). This is another point of the interview in which we can

observe how the probing questions made by the interviewer helped the student to get to use higher level language learning strategies, from cognitive to metacognitive levels.

Role-playing task.

• Cluster 1: *Camarera.*. Semantic categories. Intralinguistic factors, by linguistic function -noun; by semantic function -general rule. Extralinguistic-cultural factors: by language -sociocultural symbolic meanings at the connotative level that are common to Spanish and English, and -linguistic structures and markers at the denotative level that are common to Spanish and English; and by origin -natural physical gender for animates.

Interviewer: Here, number one, *perdón camarera. Me gustaría pedir. Yo tengo mucho hambre* (reading from student's paper). *Muy bíen.* Everything is correct. Why are you specifically using *camarera?*

Utterance 1: Student: Hm.....because is the waitress, *femenino*, and if it would be male, then you would use *camarero.* (Form of knowledge: Extralinguistic topic knowledge, as Robert is pointing out to the natural physical gender of the object referent that is reflected in the linguistic gender selected. Third developmental phase. Cognitive strategy: Translation, in this case translating to the English "waitress" helps Robert to understand that there are two linguistic gender forms related to this noun).

• Cluster 2: *Hambre.* Semantic categories. Intralinguistic factors, by linguistic function -noun; by semantic function -irregular cases. Extralinguistic-cultural factors, by language -linguistic structures and markers at the denotative level that are unique to the Spanish language, and by origin -non-natural origin gender for inanimates.

Interviewer: Why did you use *mucho hambre* (reading from student's paper).

Utterance 2: Student: Because the situation is telling you that you are hungry. So, I used *mucho hambre*, and.....it relates to *hambre. Hambre* is masculine.... I suppose..... Yes. (Form of knowledge: Extralinguistic topic knowledge and intralinguistic marker knowledge. Second developmental phase. Cognitive strategy: Ignorance of rule restrictions, as Robert is making a linguistic error when he is considering *hambre* to be a regular case, when in fact it is an irregular case. Metacognitive strategy: Self-evaluation, as he is checking if his response is correct).

Interviewer: This is one, where colloquially people make lots of errors. It is *mucha hambre.* You thought it was masculine, you were telling me, and do you relate it with something that we talked before?

Utterance 3: Student: Yes....*gente* . (Form of knowledge: Explicit intralinguistic knowledge -Markers, in which he pointed out earlier in the interview that *gente* was an irregular case that was counter regular cases. Third developmental phase. Metacognitive strategy: Elaboration, relating previous discussed cases of rule restrictions).

Interviewer: *Gente*, Okay, that's a very good intuition, and that happens to be feminine, so now does it makes sense?

Utterance 4: Student: Wouldn't it be *mucha hambre?* (Form of knowledge: Implicit intralinguistic knowledge -Marker. First developmental phase. Social-affective strategy: Question for clarification)

Interviewer: Aha, *mucha hambre.* But, does it makes sense to you?

Utterance 5: Student: Are you saying *el hambre?* It would be l*a hambre?* (Form of knowledge: Implicit intralinguistic knowledge -Marker. First developmental phase. Social-affective strategy: Question for clarification)

Interviewer: Actually this is masculine, but in this case is *mucha hambre*. Does it make sense?

Utterance 6: Student: Yes. It is an exception. (Form of knowledge: Explicit intralinguistic knowledge -Marker. Third developmental phase. Metacognitive strategy: Elaboration, relating previous discussed cases of rule restrictions).

• Cluster 3: *Pollo*. Semantic categories. Intralinguistic factors, by linguistic function -noun; by semantic function -regular case. Extralinguistic-cultural factors, by language -linguistic structures and markers at the denotative level that are unique to the Spanish language, and by origin -non-natural origin gender for inanimates.

Interviewer: *Deseo pollo y arroz con tomates en el lado* (reading from student's paper). There are no errors here, everything is correct. Ah.....There is no need for an article here, but let's pretend there is..... Which one would you pick?

Utterance 7: Student: Hmm....*el*, no, *un*....No, it would be *un pollo*. (Form of knowledge: Implicit intralinguistic knowledge -Marker. First developmental phase. Metacognitive strategy: Self-evaluation, as he is checking if his response is correct against an internal measure of accuracy).

• Cluster 4: *Arroz*, and *tomates*. Semantic categories. Intralinguistic factors, by linguistic function -noun; by semantic function -regular cases. Extralinguistic-cultural factors, by language -linguistic structures and markers at the denotative level that are unique to the Spanish language, and by origin -non-natural origin gender for inanimates.

Interviewer: How about *arroz* and *tomates?*

Utterance 8: Student: *El arroz* and *los tomates*, I guess. I guess *un arroz* would be just one (laughs). (Form of knowledge: Implicit intralinguistic knowledge. First developmental level. Metacognitive strategy: Self-evaluation).

Interviewer: Okay, How did you know *arroz* was masculine?

Utterance 9: Student: Hm.... I guess... the ending to me, is more masculine.... I learn the article with the word. (Form of knowledge: Explicit intralinguistic knowledge, as Robert is pointing to the suffix for explaining his response. Second developmental phase. Metacognitive strategy: Selective attention).

• Cluster 5: *Mano*. Semantic categories. Intralinguistic factors: by linguistic function -noun; by semantic function -irregular cases. Extralinguistic-cultural factors: by language -linguistic structures and markers at the denotative level that are unique to the Spanish language, and by origin -non-natural origin gender for inanimates.

Interviewer: How about *mano*, which is the gender for *mano*?

Utterance 10: Student: *La.*

Interviewer: Okay. For this kind of exceptions. You know, they are backwards. How did you deal with those when you study?

Utterance 11: Student: Ah....when I just study, before I look at the meaning of the word, then first what I do is to look at the article. If I just know that first it helps a lot. Then, after you make sure which article do you know, then I'll go ahead and find the meaning. (Form of knowledge: Explicit intralinguistic knowledge. Second developmental level. Metacognitive strategy: Selective attention, functional planning, and monitoring.

• Cluster 6: *Pastel.*. Semantic categories. Intralinguistic factors, by linguistic function -noun; by semantic function -regular cases. Extralinguistic-cultural factors, by language -linguistic structures and markers at the denotative level that are unique to the Spanish language, and by origin -non-natural origin gender for inanimates.

Interviewer: *Además voy a desear flan y un pastel de manzanas* (reading from student's paper). *Muy bíen.* No need for an article, but I would like that you.....

Utterance 12: Student: El *pastel.* Usually the "n" in *flan* or "l" in pastel, they usually are masculino. I studied it. (Form of knowledge: Explicit intralinguistic knowledge. Second developmental phase. Metacognitive strategy: Selective attention). It is important to note here that the student has already learned the procedure followed in the interview, and thus he can access explicit levels of knowledge and higher metacognitive strategies easier than at the beginning of the interview.

• Cluster 7: *Listo.* Semantic categories. Intralinguistic factors, by linguistic function -adjective; by semantic function -general rule. Extralinguistic-cultural factors, by language -linguistic structures and markers at the denotative level that are unique to the Spanish language, and by origin -non-natural origin gender for inanimates.

Interviewer: Okay. *Muy bíen.* Now, How do you know this is *listo* and not *lista?*

Utterance 13: Student: I am referring to myself.(Form of knowledge: Extralinguistic topic knowledge. Third developmental phase. Metacognitive strategy: Monitoring, as Robert is relating his response to the appropriateness of the extralinguistic context).

• Cluster 8: *Tortillas*. Semantic categories. Intralinguistic factors, by linguistic function -noun; by semantic function -general rule. Extralinguistic-cultural factors, by language -linguistic structures and markers at the denotative level that are unique to the Spanish language, and by origin -non-natural origin gender for inanimates.

Interviewer: Masculine. Okay. I want to ask you one more thing. If I have *las tortillas*, can I have *los tortillos.*

Utterance 14: Student: No, because there is no gender in *tortillas*, no masculine or feminine. They are just known as *las tortillas.* (Form of knowledge: Explicit relation between extralinguistic topic and intralinguistic topic knowledge. Third developmental phase. Metacognitive strategy: Inferencing, as Robert is generating an explicit linguistic hypothesis about a previously unknown meaning).

• Coming back to cluster 1: *Camarera.*

Interviewer: Aha... How about here? How come I can interchange *camarero* and *camarera* according to the situation?

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Utterance 15: Student: Because of the fact you have *persona*, they can change, masculine or feminine according to the person. (Form of knowledge: Explicit relation between extralinguistic general and intralinguistic system knowledge. Third developmental phase. Metacognitive strategy: Inferencing, grouping, and elaboration as Robert is combining previous knowledge made explicit in the interview with new words that belong to the same category).

- Coming back to Cluster 3: *Pollo.*

Interviewer: How about *pollo?* Can I have *la polla?*

Utterance 16: Student: No, even though there is feminine and masculine chicken, this is known as *pollo*, and just don't use *la polla*.. That is not right. (Form of knowledge: Explicit relation between extralinguistic topic and intralinguistic marker knowledge. Third developmental phase. Metacognitive strategy: Monitoring as Robert is checking the correctness of the linguistic form in relation to the specific case).

Interviewer: You are trying to refer to food, right? How about animals in a farm. Can I have *la polla?*

Utterance 17: Student: No, even though they are not considered as food, because they are still kicking around, they are not considered persons, masculine or feminine. They are just considered as *pollo* for referring to feminine and masculine. You know there is no *el vaco*. (Form of knowledge: Explicit relation between extralinguistic topic knowledge and Intralinguistic knowledge -System. Third developmental phase. Metacognitive strategy: Inferencing, grouping, and elaboration as Robert is combining previous knowledge made explicit in the interview with new words that belong to the same category; and incomplete application of rules). Robert is referring at this point to previous knowledge inferred in the interview process. That is, in several cases throughout the interview Robert has explicitly pointed out that people can have both natural physical genders in the real world, and that this fact may or may not be reflected in the linguistic gender forms due to the presence of general rules, regular and irregular cases. However, he is still applying this relation between extralinguistic and intralinguistic knowledge incompletely (only for extralinguistic topic knowledge such as the case of the category people -*personas* and *gente* in Spanish), as he fails to understand that this same knowledge can be transferred to the extralinguistic general knowledge level (i.e., animal referents, as both people and animals are animate objects).

Interviewer: So, this happens only in the feminine, *la vaca?*

Utterance 18: Student: Which is only a female animal. (Form of knowledge: Explicit extralinguistic topic knowledge. Third developmental phase. Metacognitive strategy: Inferencing).

Interviewer: Aha. Okay. How about if I want to point to the masculine.

Utterance 19: Student: It would be *el toro*. So, some do have different names, according to the gender. (Form of knowledge: Explicit relation between extralinguistic general knowledge and intralinguistic system knowledge, as he is pointing to the existence of a category of words that have different stems for pointing to the feminine or masculine natural genders. Third developmental phase. Metacognitive strategy: Inferencing).

Interviewer: So, If you are talking about *pollo*, you would not make the difference between the feminine and the masculine chicken?

Utterance 20: Student: Oh...I think there is a feminine for chicken. I suppose, a rooster as opposed for masculine, but I am not sure. Well, even if the chickens are feminine, they are called *pollos*. (Form of knowledge: Explicit relation between extralinguistic general knowledge and intralinguistic system knowledge. Third developmental phase. Metacognitive strategy: Monitoring, inferencing, and translation as in this case both English and Spanish have the same regular case for using words that have different stems for reflecting linguistically the natural physical gender of animates).

Interviewer: *Muy bíen. Muchas gracias.*

It can be concluded that Robert is still at the second developmental phase because he could only produce and comprehend some specific cases of the relation between intralinguistic and extralinguistic knowledge. Even though Robert is using metacognitive, cognitive, and social-affective strategies, he could not generalize always his knowledge of the explicit relation between extralinguistic and intralinguistic knowledge from the topic to the general level. However, during the interview process, he is able to get to the third developmental phase for some concepts using monitoring and inferencing metacognitive strategies to relate intralinguistic system and extralinguistic general knowledge. It also seems that the scaffolding role of the interviewer helped him to gain explicit knowledge of the Spanish language, to get to higher developmental phases, and to use higher level metacognitive language learning strategies.

Emerging thesis, themes, and topics. The first and most important emerging thesis was the presence of unidimensional and multidimensional language learning processes: (a) at the linguistic unidimensional level learners used lower level implicit cognitive strategies that corresponded to the implicit intralinguistic form of knowledge applied to semantic categories reflecting regular cases for assigning gender to inanimate referents (i.e., at the marker level), and (b) at the semantic simultaneous level learners used higher level explicit cognitive and metacognitive strategies that corresponded to the explicit relationship between intralinguistic and extralinguistic forms of knowledge applied to semantic categories reflecting the general rule for assigning gender to animate referents (i.e., at the system level). As a result, the presence of unidimensional and multidimensional language learning processes coming from the cognitive domain illustrates the complex influence of

intralinguistic and extralinguistic-cultural factors that varies for different kinds of words. That is, the extralinguistic-cultural variable specifying the origin of semantic gender cases classified as inanimates and animates leads the learner to make a conceptual distinction between physical gender (i.e., extralinguistic knowledge) and linguistic gender (i.e., intralinguistic knowledge) given by sociocultural conventions.

In sum, we propose the thesis that second language concept formation involves two hierarchical processes: (a) at the linguistic level, the construction of unidimensional representations for specific linguistic cases; and (b) at the semantic level, the construction of multidimensional representations for semantic categories that reflect the complex interaction of variables stemming from the cognitive, cultural, and linguistic domains. That is, we propose the thesis that second language learning involves the construction of linguistic and semantic categorical representations that reflect culturally and linguistically bound concepts. Cohen (1987) stated that "Categorization tasks are an integral part of second-language learning, as in the learning of agreement between subject and verb in person, number, and gender" (p. 90).

Moreover, the two second language learning processes stated by Gonzalez (1991, in press) in relation to assimilation of concepts that are similar between languages, and the need for accommodation processes for concepts that are different between languages was also present in this first emerging theme. Gonzalez (1991, in press) found the presence of one universal representational system for abstract concepts that coincided across cultural symbolic and linguistic representations, and two representational systems for semantic concepts that were culturally and linguistically bound. As a result, the first thesis emerging from the data suggested that learners think at different developmental phases in relation to the complex interaction of cognitive, cultural, and linguistic factors reflected in the second language content knowledge domain. In relation to this first theme, Karmiloff-Smith (1986) proposed the presence of two representational systems: (a) a semantic one, related

to specific knowledge domains; and (b) an abstract one, formed by re-representations that explicitly link first and second language domain knowledge.

Furthermore, in this unidimensional and multidimensional language learning thesis, we could observe a first theme or pattern that indicated a complex interaction of variables stemming from the cognitive, cultural, and linguistic domains. That is, the same individual showed both unidimensional and multidimensional language learning processes, and the presence of one or the other depended on the interrelation between intralinguistic and extralinguistic-cultural factors, clustered in the semantic categories for gender (see Table 1).

With the purpose of illustrating this first emerging thesis and theme, reference to Robert's responses and quotes from other language learners in relation to specific descriptions of findings or topics will be used. If we compare Robert's response for the word *tienda* (see Utterance 2 for the definition task) and his response for the word *persona* (see Utterance 5 for the definition task), a clear difference in the language learning process used arises. For the word *tienda* a unidimensional representational process suffices, as only the application of the general semantic rule coming from the intralinguistic domain suffices for solving this inanimate object referent case. In contrast, for the word *persona* a multidimensional representational process is needed in order to reflect the interaction of cognitive, cultural, and linguistic domains for solving this more complex semantic case. At the cognitive level, the word *persona* illustrates the need for taking into consideration both intralinguistic and extralinguistic-cultural factors. Moreover, the word *persona* reflects a sociocultural convention (extralinguistic-cultural domain) that the linguistic marker for gender (intralinguistic domain) does not reflect, as *persona* shows only one linguistic gender but it refers to both feminine and masculine natural genders.

A second thesis that we could observe was the influence of intralinguistic and extralinguistic-cultural factors, merged in the semantic categories for gender, on different forms of knowledge and developmental phases that were used by the same language learner. This second thesis leads to the formulation of the second theme that words that

corresponded to the general semantic rule evoked lower level cognitive strategies in every learner. In contrast, words that corresponded to regular and irregular semantic cases evoked higher level cognitive and metacognitive strategies. Descriptions of specific findings or topics illustrate this second thesis and theme. For instance, the word *gente* (people in English) required in learners a higher frequency of cognitive and metacognitive strategies, and also to make an explicit relation between intralinguistic and extralinguistic-cultural knowledge (see Table 2). In contrast, the word *jóven* (youth in English) elicited in learners a lower frequency of metacognitive strategies, and an explicit intralinguistic form of knowledge (see Table 3). Thus, the word *gente* corresponded to an irregular semantic case that required the multidimensional consideration of intralinguistic and extralinguistic-cultural factors as it was further away from the general rule in comparison to the word *jóven*. The word *gente* denotes an animate referent that extralinguistically has natural physical gender, and therefore should reflect the general semantic rule. However, the word *gente* is a collective noun that has a neutral linguistic gender, and therefore an irregular semantic case that is also a counterexample of two other regular semantic cases: (a) "nouns ending in "e" tend to have a masculine linguistic gender", and (b) "masculine prevails over feminine linguistic gender when the referents include both natural genders". Thus, the word *gente* is linguistically feminine and singular (intralinguistic domain); however, it refers to both genders at the symbolic cultural convention level (extralinguistic-cultural domain), and is conceptually a collective noun encompassing both physical genders referring to animates (i.e., cognitive domain). Therefore, for the word *gente* just a unidimensional linguistic conceptual formation process does not suffice; the concept formation problem will be solved only if the three cognitive, cultural, and linguistic factors are taken into account simultaneously and, therefore multidimensionally by the learner.

Place Tables 2 & 3 about here

Thus, at the linguistic and semantic levels, the word *gente* calls for the construction of a new concept at a higher form of knowledge and developmental phase as it an irregular semantic cases, and it goes against the general semantic rule and two regular semantic cases. Therefore, the second language learner needs to use metacognitive strategies at the highest forms of knowledge and developmental levels in order to construct a new concept that encompass the multidimensional interaction of linguistic, cultural, and cognitive factors merging in the semantic representation of knowledge. For instance, Robert's response represents a common reaction to the semantic complexity of the word *gente* "...I guess I wasn't sure like in *gente*, that is just a part of *personas* (people in English) and it relates to people...but it is just used in the *la* form" (see Utterance 28 for the definition task). This response illustrates the use of monitoring and inferencing metacognitive strategies, relating explicitly extralinguistic topic knowledge and intralinguistic knowledge at the marker level, and the construction of concepts at the third developmental phase. Moreover, using again Robert's response for the word *persona* (see Utterance 5 for the definition task), he showed an explicit relation between intralinguistic and extralinguistic knowledge, he was at the third developmental phase, and he used the metacognitive strategy of inferencing. In contrast, using again Robert's response for the word *tienda* (see utterance 2 for the definition task), it portraits an example of lower level concept formation processes needed as only a unidimensional consideration of intralinguistic factors suffices for this inanimate object referent that conforms to the general semantic case. In this latter response, Robert showed an explicit intralinguistic form of knowledge at the marker level, he was at the second developmental phase, and he used the cognitive strategy of deduction. In conclusion as shown by these examples, the same learner could use lower or higher level language learning strategies and forms of knowledge, and be at different developmental phases in relation to the unidimensional or multidimensional characteristics of different content domains of knowledge representations.

A third thesis was the appearance of new insights, new access to explicit knowledge, and the construction of new forms of knowledge (i. e., new relations across linguistic concepts, new intralinguistic-extralinguistic connections, new inferences at a higher cognitive level) during the course of the interview. We felt that through verbal reports we could access "invisible" or internal language learning processes, as if we were opening a window to the students' minds that generated the occurrence of language learning processes before us. Thus, in the process of trying to explain the reason why a particular linguistic structure was produced, the language learner could understand new forms of knowledge, a learning process that was stimulated by the scaffolding role of the interviewer, who used counterexamples and probing. As a result, a third theme emerging from data analysis was that learners revealed in the verbal reports how they formed new concepts by re-representing knowledge from lower to higher developmental phases. That is, this third theme emerging from data analysis supports the thesis that the kind of questions used by the interviewer was related to the level of knowledge accessed by the learner.

This third thesis and theme can be portrayed by descriptions of specific findings or topics by comparing Robert's responses for the word *gente* in two different occasions during the interview process. The first response that Robert gave for explaining the linguistic gender of the word *gente* portraits a unidimensional representational process (see Utterance 17 of the definition task): "Well, because of the majority of the people, even if there was only one man, in a group of women; it wouldn't matter, it will be always masculine. And, if there is only a big group of just women, then it would be *la*.". Robert showed an explicit intralinguistic knowledge at the system level, a second developmental phase, and the use of the cognitive strategies of overgeneralization and ignorance of rule restrictions. In contrast, when the linguistic gender for this same word is explained by Robert by the middle of the interview (see Utterance 28 of the definition task), Robert said: "I wasn't sure,..... I guess I wasn't sure like in *la gente*, this is just a part of *personas* and

it relates to people.... but it is just used in the *la* form". This latter response shows the presence of an explicit relation between extralinguistic-cultural topic knowledge and intralinguistic knowledge at the marker level, a third developmental phase, and the use of the metacognitive strategies of inferencing and monitoring. At this point of the interview, Robert is able to relate his previous understanding that *gente* refers to both feminine and masculine animate referents, with his realization that the category *personas* can refer to animate referents of both physical genders. Thus, Robert could realize at this point of the interview that there was a connection between *gente* and *personas*, as both had the same animate referent -the category people in English-. As a result, Robert is having a major insight, achieving at a higher level of understanding, a higher form of knowledge and developmental phase, and using more complex learning strategies.

This third thesis that the introspective report method for eliciting verbal reports can stimulate the learner to think at higher levels can be also portrayed by using descriptions of specific findings or topics given by two quotes produced by Karen referring to the same word *cliente* (client in English) appearing at two different points in the interview. At the beginning of the interview Karen explained her correct choice of masculine gender for the word *cliente* as follows: "I wasn't sure if it was masculine or feminine, but with an *e* it could be either one. I wasn't sure and it was kind of a guessing game, usually I think it's going to be masculine if it ends in an *e*". In the middle of the interview Karen was asked again if the word *cliente* could be only masculine. It is important to mention that before she had explained that the word *gente* could have only one gender and that idea was influencing her following utterance in relation to the word *cliente*: "I would think you could make it feminine, just because it has an ending that you don't need to mess with". When comparing both utterances referring to the same word *gente* at different points in time in the interview, we can observe a progression in the level of learning strategies used: from a cognitive strategy of deduction, as Karen was explicitly applying the linguistic rule; to a metacognitive strategy of inferencing, as she was constructing a new explicit

hypothesis of a previously unknown meaning in the second language. It is important to note that the word *cliente* also deviates from the general rule stating that "words ending in *e* tend to be masculine." The word *cliente* is a regular semantic case as animate referents can have both physical gender in relation to symbolic sociocultural conventions. Thus, the learner needs to construct a new concept taking into consideration multidimensional factors including cognitive, cultural, and linguistic domains. Therefore, if thought-provoking questions are used for eliciting verbal reports, the interviewer can help the learner to think with language at higher levels. The issue of the level of knowledge accessed by the learner being related to the type of questions used is presently still a controversy because there are different positions regarding the validity of data collected through verbal reports. Some authors argue that accessing internal language learning processes and representations through verbal reports is not possible (e g., Seliger, 1983). In sum, it is our thesis that the type of questions made by the researcher will make a difference in what level of knowledge is accessed: language use (i.e., how do learners use the language at the pragmatic and implicit level) versus language learning (i.e., how do learners represent language, what strategies do learners use for producing and understanding language at the explicit level).

Several authors support our same thesis that the type of questions influence the knowledge level accessed. According to Cohen (1987) in this study we ask for a verbalization of the learning process that resulted in a description of internal language processes (i.e., language learning strategies and forms of knowledge used), as well as a description of the study skills that learners used. White (1980) pointed out that the type of questions and tasks included by the researchers for generating verbal reports will influence how much attention learners could pay to their cognitive processes. Hayes and Flowers (1983) suggested that although some thinking processes are unconscious, we can still explore and collect evidence on cognitive processes that are not available in overt language performance. Dechert (1987) stated that part of human cognitive processes are accessible

for verbalization (i.e., declarative knowledge), and part are not accessible (i.e., procedural knowledge).

Thus, it is our thesis that the type of questions used in eliciting verbal reports in this research study served as an opportunity for language learners to consciously access new insightful knowledge at higher developmental levels. Thus, we consider that verbal reports can serve as a psycho-pedagogical tool for increasing accessibility to declarative knowledge by the language learner. According to Dechert (1987) verbal reports in second language research are tools for documenting the inherent structure and rules of language processing. We propose that it is through verbal reports that we can discover how second language learners represent knowledge through language, and as a result we can study the relation between language and thought. Learners were trained throughout the semester to focus on concept formation and in accessing implicit knowledge through reflection for re-representing their procedural or implicit knowledge in an explicit form. This conceptual approach for teaching Spanish as a second language may have had an influence on the presence of new inferences and the re-representation of knowledge at higher levels that we could observe during the interviews. Moreover, the use of verbal reports may stimulate language learners to gain conscious access to procedural or explicit knowledge in the process of second language concept formation. That is, higher levels of knowledge levels attained during the process of interviewing learners could have been influenced by the type of questions and probing used by the researcher in the verbal reports. Thus, verbal reports may stimulate the second language learner to gain consciousness to procedural or explicit knowledge in the process of concept formation. Then, it is important to conduct a second study with a control group of subjects who have not been exposed to a conceptual instructional approach, but to a standard grammar approach.

The fourth emerging thesis was that the interview process and the scaffolding role of the interviewer helped the learner to gain access to metacognitive and cognitive strategies used as study skills for second language learning. Thus, the fourth emerging theme was

that verbal reports revealed the underlying cognitive, metacognitive, and metalinguistic processes used as study skills by second language learners. Robert's response for the role-playing task (see Utterance 9) portraits this fourth thesis and theme emerging from descriptions of specific findings or topic. Robert's response reveals the study skill that he used for learning this kind of words while trying to explain the reason why he had selected the masculine linguistic gender for the word *arroz* (rice in English): "Hm.... I guess... the ending to me, is more masculine.... I learn the article with the word". Robert explains that he focused his attention in the specific gender of the article associated with the new word that he is trying to learn, study skill that was coded as a cognitive strategy named selective attention. Another example in relation to study skills is given by Michael , who also used selective attention for dealing with irregular semantic cases exemplified by the word *gente* : "So you just have to make a special note that this word is just masculine or this word is just feminine". Thus, in these examples the metacognitive strategy of selective attention relates to study skills that second language learners had developed for dealing with irregular semantic categories for gender.

In addition, three more related themes emerged from data analysis. The fourth emerging theme was the presence of individual learning approaches that were associated with a tendency to use specific language learning strategies that appeared more frequently in relation to specific forms of knowledge and developmental phase at which the learner tended to perform. The sixth emerging theme was the use of a limited or a vast repertoire of language learning strategies in a specific learner, that was also related with the preferred form of knowledge used and developmental phase achieved. The seventh emerging theme was the relation between learners' specific strategies, forms of knowledge, and developmental phases and their personal experiences with the Spanish language (e.g., contact with the Spanish language during early childhood, context of second language learning). These three related themes emerging from data analysis were stemming from the same thesis: "Second language learners present unidimensional tendencies to use learning

strategies and forms of knowledge, and to perform at a specific developmental phase due to the influence of cognitive and extralinguistic-cultural factors. The fifth theme pointed out to a cognitive factor, the presence of idiosyncratic second language learning approaches. The sixth theme also pointed out to a cognitive factor that revealed individual differences in how second language learners use learning strategies. The fifth theme portrayed an extralinguistic-cultural factor showing how personal background experiences with the target language could influence the expression of cognitive factors (i.e., forms of knowledge, developmental phases, and learning strategies).

The following descriptions of specific findings or topics can help to illustrate the fifth emerging theme. For the explicit knowledge form, learner preferred the higher level cognitive strategies of deduction and elaboration, indicating the application of rules for concepts that were different between Spanish and English. For the implicit knowledge form, learners preferred the lower level cognitive strategies preferred of auditory representation, visual imagery, repetition, and key words. It can be observed in the case study presented above, that Robert functions at the second developmental phase, with some potential to achieve at the third developmental phase with the scaffolding help of the interviewer, and that he uses implicit and explicit knowledge forms. In addition, Robert has the tendency to use the cognitive strategies of deduction and question for clarification, corresponding to an implicit knowledge form; and the metacognitive strategies of selective attention and self-evaluation, corresponding to an explicit knowledge form.

All these three related themes emerging from data analysis can be illustrated by the comparison of the two individual learning approaches of Robert and Jessica, that are different and yet similar at the same time. Robert used primarily the second developmental phase, in relation to both implicit and explicit forms of knowledge; however, he had the potential to achieve at the third developmental phase with the help of the scaffolding role of the interviewer. His individual learning style is different than the other learners as Robert demonstrated a broad spectrum of learning strategies and displayed the largest vocabulary

and topic knowledge. Robert used cognitive (i.e., translation, grouping, deduction, recombination, imagery, key word, and contextualization), metacognitive (i.e., selective attention, self-evaluation, and inferencing), as well as social-affective strategies (i.e., question for clarification) for second language learning. Even though Jessica shows also a broad range of developmental phases, she uses consistently a limited repertoire of cognitive (i.e., deduction, auditory representation, and contextualization) and social-affective strategies (i.e., question for clarification), and she shows the emergence of some metacognitive strategies (i.e., monitoring and inferencing). Thus, both learners have a common pattern in relation to the broad range of developmental phases at which they can be stimulated to perform. However, at the same time they show unique profiles in relation to the variety, frequency, and level of learning strategies used.

Robert and Jessica can also serve as examples to illustrate the seventh theme, as their language learning background histories can also shed some light in our interpretation of the individual learning approaches shown by these two learners. Robert had had the chance to use Spanish for communication with his grandparents during early childhood. As a result, he had some implicit knowledge of the language as a former native speaker, as well as some explicit knowledge as an adult second language learner in a formal context. Jessica had had some background in learning French and Spanish as a second language only in formal contexts, and thus she used frequently explicit intralinguistic forms of knowledge both at the rule and specific cases levels.

Conclusions

It is concluded that there is a multidimensional interaction between cognitive, cultural, and linguistic factors affecting concept construction in second language learning situations. In the verbal reports it was revealed that concept construction is a complex process, encompassing unidimensional and multidimensional processes in relation to the linguistic or semantic levels of content knowledge domains in second languages. The linguistic level of concept construction occurred when learners accessed implicit intralinguistic forms of knowledge at a first developmental phase. The semantic level of concept construction occurred when learners accessed explicit intralinguistic and extralinguistic-cultural forms of knowledge at a second and third developmental phases. Thus, the same learner could access higher or lower forms of knowledge, and performed at different developmental phases in relation to the particular semantic and linguistic characteristics of the second language content knowledge. Moreover, we found that all the learners could benefit from the use of verbal reports and from the help of the scaffolding role of the interviewer. Learners could gain implicit and/or explicit knowledge of the relations between intralinguistic and extralinguistic-cultural knowledge, and they could gain access to cognitive and metacognitive learning strategies used as study skills.

At the same time we also found individual tendencies to use learning strategies and forms of knowledge, and to perform at specific developmental phases that were related to cognitive (i.e., idiosyncratic learning approaches, and a limited or a vast repertoire of learning strategies) and extralinguistic-cultural factors (i.e., the second language learner's individual history). The most advanced students could produce and comprehend explicitly the relations between intralinguistic and extralinguistic-cultural knowledge at a general level. In contrast, the less advanced learners could not produce nor comprehend the relations of intralinguistic and extralinguistic-cultural knowledge forms. That is, the less advanced learners showed only an implicit intralinguistic knowledge, with no understanding of the relation between intralinguistic and extralinguistic-cultural knowledge

forms. Some learners were at an intermediate level of explicit production and comprehension of the relations between intralinguistic and extralinguistic-cultural knowledge. These intermediate learners could produce and comprehend some specific cases of the relation between extralinguistic and intralinguistic knowledge, but could not generalize their explicit knowledge (i.e., topic knowledge).

Scientific and Educational Implications of the Study

This study is relevant from a theoretical and applied perspectives. Theoretically, this study presents a model for gaining understanding of the influence of linguistic and cultural factors on conceptual learning in second language situations in adults. This model presented leads to gain insight on how adult second language learners develop concepts for new linguistic structures and symbolic cultural meanings. At an applied level, the study suggests a new educational approach for teaching second languages through conceptual learning using verbal reports for gaining higher levels of knowledge and study skills. Thus, the main educational implication will be the optimization of second language learning processes by using conceptual learning as a method for instruction for adults (i.e, middle and high school, and university levels -graduate and undergraduate students).

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Table 1
Interelation of Intralinguistic, Extralinguistic-Cultural, and Conceptual Factors when Constructing Concepts in Second Language Situations.

Intralinguistic Factors	Extralinguistic-Cultural Factors	Cognitive Factors
• By Linguistic Function	**• By Language**	**• Forms of Knowledge**
		-3rd Developmental Phase
Nouns	• Sociocultural Symbolic Meanings	1-Extralinguistic General
Articles	-Connotative Level,	2-Extralinguistic Topic
Adjectives	-Common to Spanish and English	3-Explicit Relation Between
Adverbs	-Unique to Spanish	Extralinguistic Topic
Numerals		Knowledge and
Indefinite Pronouns		Intralinguistic Knowledge
Demonstrative Pronouns	• Linguistic Structures and Markers	(System and Marker)
Subject Pronouns	-Denotative Level	**-2nd Developmental Phase**
Direct Object Pronouns	-Common to both Spanish and English	4-Explict Intralinguistic
Indirect Object Pronouns	-Unique to Spanish	Knowledge (System and
	• By Origin	Marker)
	-Natural Physical Gender: Animates	**-1st Developmental Phase**
	(including people and animals)	5-Implicit Intralinguistic
	-Non-natural Origin Gender: Inanimates	Knowledge (System and
	(including objects and abstract concepts)	Marker)
• By Semantic Function: Semantic Categories		**• Second Language Learning Strategies**
• General Rule (2)		-Metacognitive: Explicit
• By Origin: for Inanimates, and for Inanimates (1)		Knowledge
• By Language: Unique to Spanish (1)		-Cognitive: Explicit and
• Regular Cases (14)		Implicit Knowledge
• By Origin: for Inanimates (6)		-Social-affective: Implicit
• By Language: Common to Spanish and English (1), and Unique to Spanish (5)		Knowledge
• By Origin: for Animates (8)		
• By Language: Common to Spanish and English (2), and Unique to Spanish (6)		
• Irregular Cases (1)		
• By Origin: for Inanimates (1)		

Table 2
Frequency of Language Learning Strategies, Forms of Knowledge, and Developmental Phases for the Word "Gente"

Word Gente: Irregular Case for the Semantic Function for Gender			
Strategy (Frequency)		Form of Knowledge [a] (Frequency)	Developmental Phase (Frequency)
Repetition	1	3 (2)	3 (2)
Translation	1	4b (2)	2 (2)
Deduction	16	4b (10) 5b (1)	2 (10) 1 (1)
Imagery	1	5a (1)	1 (1)
Auditory Representation	3	5a (1)	1 (1)
Key Word	1	5a (1)	1 (1)
Selective Attention	4	5a (1) 3 (1) 4b (1) 4a (1)	1 (1) 3 (1) 2 (1) 2 (1)
Monitoring	1	3 (1)	3 (1)
Inferencing	5	3 (3) 4b (2) 2 (1)	3 (3) 2 (2) 2 (1)
Question for Clarification	4	4b (1) 5a (1) 5b (2)	2 (1) 1 (1) 1 (2)

Note. The numbers in parentheses refer to frequencies for forms of knowledge and developmental phases.

a For the forms of knowledge category, 2= extralinguistic topic knowledge, 3 = explicit relation between extralinguistic general or topic knowledge and intralinguistic marker or system knowledge, 4a = explicit intralinguistic system knowledge, 4b = explicit intralinguistic marker knowledge, 5a = implicit intralinguistic system knowledge, and 5b = implicit intralinguistic marker knowledge.

a

Table 3
Frequency of Language Learning Strategies, Forms of Knowledge, and Developmental Phases for the Word "Jóven"

Word Jóven: Special Case for the Semantic Function for Gender

Strategy (Frequency)		Form of Knowledge (Frequency)	Developmental Phase (Frequency)
Grouping	2	4a (1) 4b (1)	2 (1) 2 (1)
Deduction	16	4a (2) 4b (14)	2 (2) 2 (14)
Imagery	4	5b (4)	1 (4)
Auditory Representation	4	4b (4)	2 (4)
Elaboration	1	4b (1)	2 (1)
Inferencing	1	4b (1)	3 (1)

Note. The numbers in parentheses refer to frequencies for forms of knowledge and developmental phases.

a For the forms of knowledge category, 4a = explicit intralinguistic system knowledge, 4b = explicit intralinguistic marker knowledge, 5a = implicit intralinguistic system knowledge, and 5b = implicit intralinguistic marker knowledge.

Appendix A
Semantic Categories for Gender

General Rule

There is only one general rule stating that nouns ending in -a (suffix) are feminine, and that nouns ending in -o (suffix) are masculine. The corresponding definite (*el* for masculine, and *la* for feminine) or indefinite (*un* for masculine, and *una* for feminine) article should match the linguistic gender of the noun.

• General Rule for Inanimates, Different.

These nouns only have one linguistic gender. Only one linguistic gender can exist, according to sociocultural linguistic conventions, independently most of the time of the intrinsic nature of the object. Thus, here the general rules applies: (a) an "-a" ending or suffix implies feminine linguistic gender, and an "-o" ending or suffix implies masculine gender.

• General Rule for Animates, Different.

People and animals most of the time take a feminine and a masculine form, according to the natural physical gender of the referent. In English only sometimes this change of gender in the markers of nouns happens. That is, we can have the following regular cases:

Regular Cases For Inanimates

• Regular Case for Inanimates 1, Common.

a) Some historical linguists propose a cultural connotative meaning, that points to the cultural symbolic meaning of the object. For example, the land/*la tierra* being feminine linguistically in Spanish. In addition, the symbolic meanings is also feminine (and thus the connotative meaning) across languages and cultures. Note, that this feminine symbolic meaning may not be present in the linguistic structure and its markers, such as in the English language (that is called the denotative meaning). However, the connotative meaning can exist independently of the denotative meaning (sometimes there is a commonality in between Spanish and English in connotative but not in denotative meanings).

• Regular Case for Inanimates 2, Different.

Nouns ending in "tad', "dad", "ción", and "sión" are feminine, and thus require a feminine article. Some of these nouns can be abstract concepts. For example, *la libertad, la responsabilidad*. Other nouns are concrete objects. For example: *la composición, la televisión*.

When collective nouns refer to categories of objects (inanimates), most of the time they cannot be pluralized, because they are considered in Spanish mass nouns (e.g., *la ropa, la comida*).

• Regular Case for Inanimates 3, Different.

For some inanimate nouns, when the gender changes, the meaning of the word also changes. For example: *el libro* means book and *la libra* means the pound, *el manzano*

means the apple tree and *la manzana* means the apple fruit., *el televisor* means the actual television as an electric appliance and *la televisión* means the media. For other inanimate nouns a change in gender can happen and it will not affect the meaning of the word. For instance, *el refrigerador and la refrigeradora.*

• Regular Case for Inanimates 4, Different.

Some inanimate nouns have a plural form, but the corresponding article is singular. For example, *el lavaplatos, el espantapájaros, el cumpleaños.*

• Regular Case for Inanimates 5, Different.

Inanimate nouns ending in "-e" tend to be masculine. For instance, *el accidente, el cine, el nombre, el norte, el tomate, el restaurante.*

• Regular Case for Inanimates 6, Different.

Inanimate nouns ending in a consonant (e. g. , "l", "n", "r", "z") tend to be masculine. For instance: *el papel , el flan, el televisor, el arroz.*

• Irregulars Cases for Inanimates 1, Different

There are a number of exceptions for inanimates, such as *el problema, el sofá, la carne, el agua .*

Regular Cases For Animates

• Regular Case for Animates 1, Different.

Collective nouns take only one gender, according to the linguistic gender. That is, the collective noun will be feminine if the word ends in "-a", according to the general intralinguistic rule (e.g., *la familia*) ; and in "tad', "dad", and "ción", "sión", according to the specific intralinguistic cases (e.g., *las profesiones*). The collective noun will be masculine if the word ends in a consonant (e.g., *el animal*).

Collective nouns refering to people (animates) sometimes can be pluralized (e.g., *las profesiones, las personas*); in other occasions only the singular form exists (e.g., *la gente, el pueblo, el público, el ser humano*).

• Regular Case for Animates 2, Different.

Variable suffixes and common stems: Masculine nouns tend to end in a consonant, for forming the feminine add an "-a "suffix. For example, for people: *el alemán* (masculine)- *la alemana* (feminine); and for animals: *el león* (masculine) - *la leona* (feminine).

• Regular Case for Animates 3, Different.

Common words and different articles: These nouns tend to end in an "-e" suffix more frequently. However, there are also some nouns ending in other vowels: "-a" and "-o"; or in a consonant: "-n", "-r", and "-d". Gender for these nouns is marked by the gender of the definite or indefinite article. For example: *el/la cliente, el/la turista, el/la testigo, el/la jóven, el/la bachiller, and el/la huesped.*

• Regular Case for Animates 4, Different.

Pluralization of animate nouns: Masculine prevails over feminine when there is a group of individuals or animals that you are referring to. For example: *los estudiantes* will refer to both female and male students; *los profesores* will refer to both gender also. When you specifically point to the feminine case, then only female individuals or animals are included. For example, *las estudiantes* will refer only to a group of female students.

• Regular Case for Animates 5, Common.

Roles, professions, and occupations: These nouns sometimes exist in both genders, following the above regular cases explained (e. g., *el profesor/la profesora, el/la estudiante, la madre/el padre*). In other occasions, the nouns can only exist in feminine or masculine forms, due to sociocultural reasons (i. e., professions, occupations, and roles can only be feminine or masculine). This is changing very rapidly in the present. For example, *la mujer policía* has been a noun created very recently reflecting the changes in society; the same with *la doctora* and *la ingeniera*.. Some professions or occupations still remain only in one gender. For example, *el gerente, el mecánico, el ama de casa, el hotelero, el comandante, el plomero.*

• Regular Case for Animates 6, Different.

Animates with only one linguistic gender: Some nouns for labeling animals or people only show one linguistic gender, corresponding to the actual ending of the word. For example, *el pájaro, la mosca, el pinguino, la ballena, la zebra, la jirafa, el asno, el pez, el pollo, la persona.* These nouns for animals that have only one linguistic gender refer to both female and male cases. For specifying the gender of the animal an adjective can be added, such as *macho* for male animals (e.g., *el elefante macho*), and *hembra* for female animals (e.g.,*el elefante hembra*).

• Regular Case for Animates 7, Common.

Different words or stems: These nouns change completely from the masculine to the feminine form. For example, for people: *el padre/la madre, el hombre/la mujer*; and for animals: *el toro/la vaca; el caballo/la yegua.*

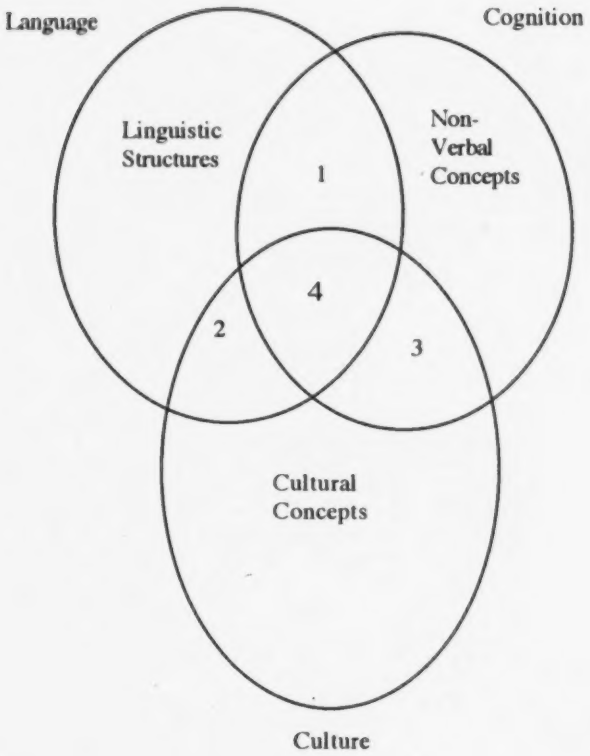
• Regular Case for Animates 8, Different.

Common stem and different ending: These nouns share the prefix; however, the suffix is different when feminine and masculine forms are produced. For instance: *señor/señorita, gallo/gallina*).

• Irregulars Cases for Animates, Different.

There are a number of exceptions to the general rule and the specific cases. For example, *actor/actríz, la reyna/el rey, la jefa/el jefe.*

Figure 1. The multidimensional interaction of language, cognition, and culture for the construction of concepts in second language situations.



1 Conceptual knowledge about linguistic structures that can be expressed at both implicit or explicit levels.
2 Knowledge of cultural conventions for using linguistic structures that is expressed as language proficiency at the pragmatic level.
3 Knowledge of non-verbal sociocultural symbolic meanings that is expressed as cultural non-verbal concepts used at the pragmatic level.
4 Multidimensional interaction of language, cognition, and culture when constructing new concepts in a second language.